



Chickahominy Lake 2008

Chickahominy Lake is a 1230-acre water supply reservoir located along the New Kent-Charles City county line. The low-head dam of this reservoir is known locally as Walkers Dam. This dam was completed in 1943 and it incorporates twin Denil fish ladders to allow for the passage of anadromous fish such as blueback herring and striped bass. This cypress-laden lake provides a spectacular backdrop for photographers and great place for bird watchers. The lake has historically been one of the best all around fisheries in Virginia. The lake's forage base is primarily based upon the populations of gizzard shad and blueback herring. A decent population of golden shiners is also present. Chickahominy Lake has a plentiful supply of fish habitat in the form of cypress trees, water lilies and submerged aquatic vegetation. Hydrilla and various other forms of submerged aquatic vegetation have been able to grow rather dense in numerous, shallow areas of the lake. The abundance of vegetation serves as a nursery area for many juvenile fish. Anglers must be willing to adjust to the heavy vegetation during the late spring to early fall time period. The boat lock area on Walkers Dam suffered a major, structural collapse during April 2007. Chickahominy Lake became a fully tidal reach of the Chickahominy River. The initial stages of dam repair were able to close the breached section around the end of October 2007 to allow the lake to return to its full pool level.

The Virginia Department of Game and Inland Fisheries conducted two electrofishing surveys of Chickahominy Lake on March 12th and 30th, 2007. The reservoir was last sampled on April 25, 2006. The 2007 electrofishing survey consisted of covering the same six shoreline sections from the 2006 survey along with 3 additional sites. Each shoreline area took 20 minutes to sample for a combined effort of three hours. The combination of these nine sampling runs provides a picture of the present fish assemblage. The water temperatures ranged from 19 to 20°C. Electrofishing efforts consisted of shocking along the shoreline habitat as close as possible, with the majority of the effort concentrated in the 2 to 4 foot depth range. The sample collected 17 fish species. Predator species of bass, black crappies, chain pickerel, bowfins and yellow perch were collected during each run. Species such as bluegills, redear sunfish and other non-predator species were collected over the course of three runs for one hour of effort on March 30th. This report will concentrate primarily upon the species of largemouth bass, bluegill, black crappie, chain pickerel, bowfin, yellow perch and redear sunfish.

Table 1. Summary of the electrofishing surveys for the primary fish species of Chickahominy Lake. (March 12th and 30th, 2007)

Species	# Collected	Largest Length	Average Length
Largemouth Bass	247	21.8"	12.4"
Bluegill	68	7.3"	3.2"
Black Crappie	66	13.9"	10"
Chain Pickerel	31	20.6"	12.2"
Bowfin	179	29.8"	19"
Yellow Perch	27	10"	6.1"
Redear Sunfish	65	10.1"	4.9"

The largemouth bass population within Chickahominy Lake appears to be in good shape. The overall size structure favors the presence of bass greater than 12 inches in length. A total of 247 largemouth bass were collected over the course of two sample days. The CPUE (Catch Per Unit of Effort) for largemouth bass was an extremely impressive 82.3 bass/hr. This CPUE rates higher than most waters within the region and is almost double the CPUE from the 2006 survey (CPUE 41.5 bass/hr). The abundance of young bass in the 7 to 11 inch range brought down the overall average length of bass to 12.4 inches. The size distribution of the collected bass can be seen on the enclosed length frequency graphs.

Figure 1. Length frequency distribution of largemouth bass collected from Chickahominy Lake on March 12th and 30th, 2007 (N = 247, CPUE = 82.3 f/hr)

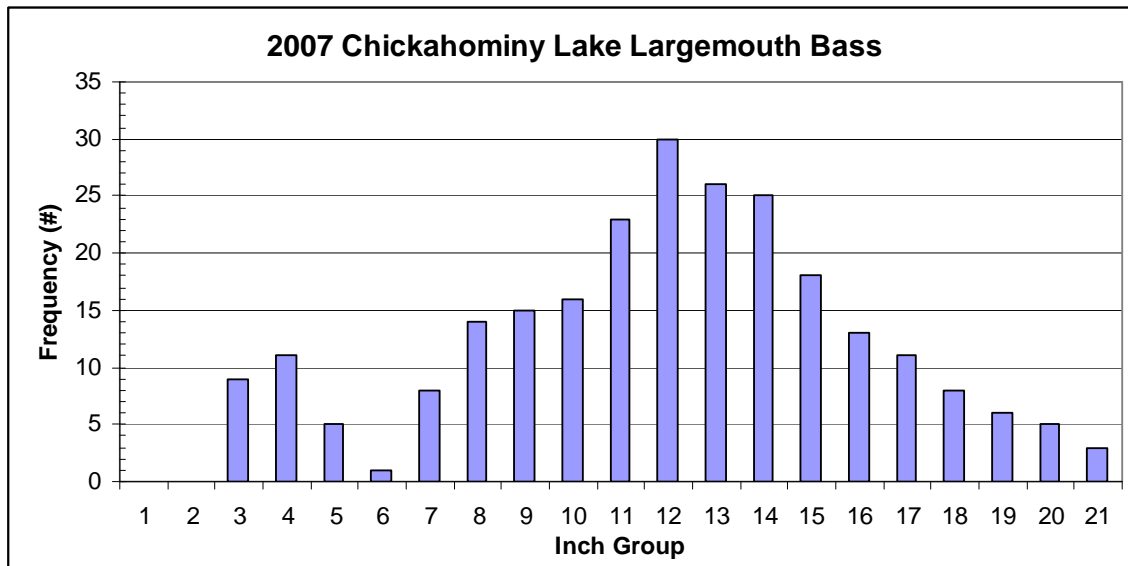
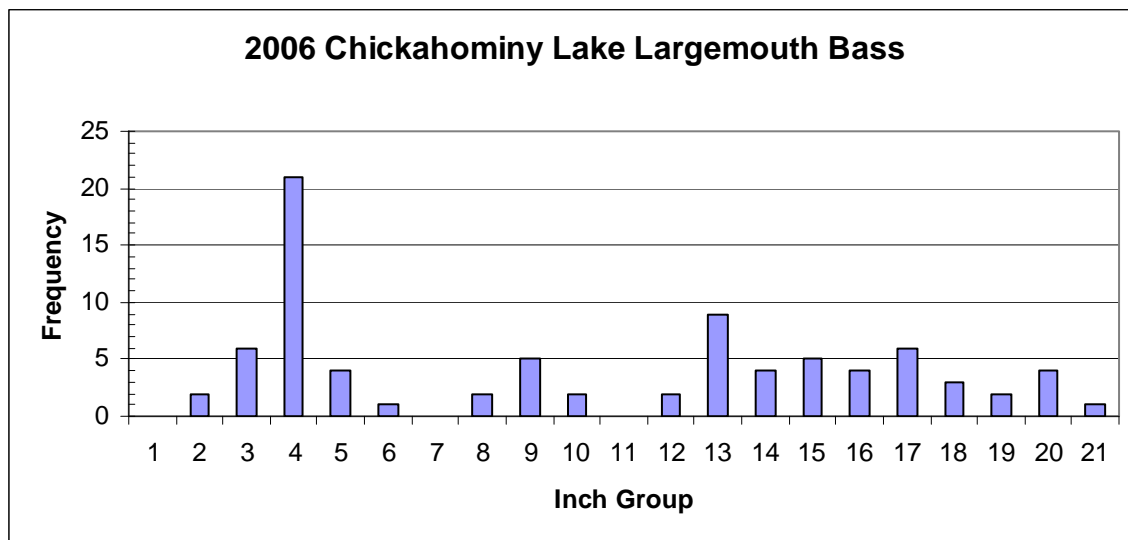


Figure 2. Length frequency distribution of largemouth bass collected from Chickahominy Lake on April 25, 2006 (N = 83, CPUE = 41.5 f/hr)



The 2007 distribution showed a high proportion of bass in the 12 to 18 inch size range. These bass will provide a great deal of the fishing excitement. The distribution of collected bass appears as a blended assortment that almost forms a bell shaped curve. No year classes could be easily detected except for the 1-year old bass in the 3 to 5 inch range. These bass do not appear to be growing all that quickly during their first year of life. The largest bass by measured 21.8 inches and weighed 6.95 pounds. Our sampling efforts are just a representative picture of the fish community collected along the nine shoreline sites sampled.

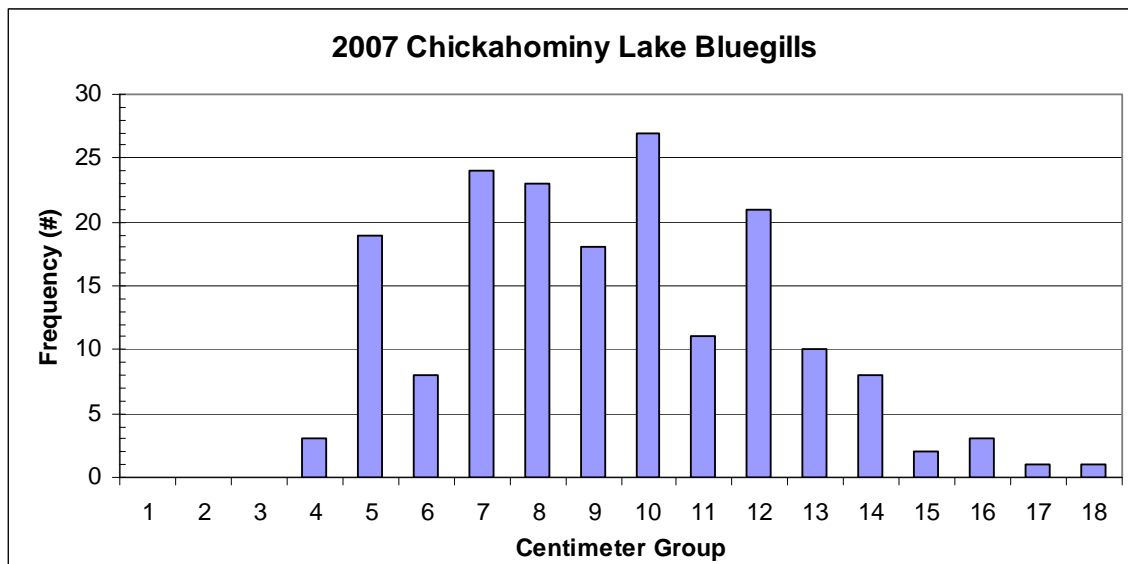
Fisheries biologists of the past established certain size classifications to describe the fish they collected. It is through these size classifications that population dynamics are analyzed. The size designations are stock, quality, preferred, memorable, and trophy. The PSD (Proportional Stock Density) is the proportion of stock-sized bass (8 inches or larger) that are also equal to or greater than 12 inches (quality size). A balanced bass/bluegill fishery has a bass PSD value within the 40 – 70 range. With largemouth bass being the most popular game fish in this country, it has been considered that a “preferred” bass is one that is over 15 inches in length. The RSD-P (Relative Stock Density of Preferred bass) is the proportion of stock-sized bass that are also equal to or greater than 15 inches in length. The PSD and RSD-P values represent the distribution of collected fish, but one must take into account the total number of bass collected along with the total of stock-sized bass in the sample. The sample showed an extremely high PSD value of 70, which is a direct reflection of the 149 quality-sized bass. The sample had a total of 214 bass that were stock size or larger. The RSD-P value of 30 is a direct reflection of the 64 preferred-sized bass collected. The 2007 PSD and RSD-P values were lower than the 2006 values (PSD = 82, RSD-P = 49), but showed an improved balance to the overall bass population.

Weights were taken on largemouth bass to calculate relative weight values. Relative weight values are an indication of body condition. A value from 95 to 100 represents a fish that is in the healthy range and finding a decent amount of food. The higher the value, the better the condition of the fish in terms of overall body mass.

Weights were taken on all collected bass. The relative weight values for stock, quality, preferred and memorable bass (>8", >12", >15", >20") were 97, 97, 100 and 101 respectfully for the March 12th survey. The March 30th survey revealed relative weights of 100, 101, 101 and 106. These relative weight values fell within or above the desired range of 95 to 100 and show an increase from the 2006 sample (stock: 99, quality: 99, preferred: 100 and memorable: 96). The elevated relative weights show that the largemouth bass are finding sufficient amounts of prey items to forage upon.

The sample revealed the bluegill fishery to be dominated by fish less than 6 inches in length. Electrofishing effort was able to collect 179 bluegills over the course of three sample runs (1 hour). This CPUE of 179 bluegills/hr was very similar to the 2006 survey (175 bluegills/hr). The size distribution can be seen on the attached length frequency graph. The 2007 size distribution is similar to past survey years in that very few bluegills were larger than 6 inches (15 centimeters) in length. All bluegills were measured by centimeter count and are displayed in centimeter groups. The 10 centimeter group represents bluegills that are 4 inches in length. The abundance of small bluegills brought the average sized bluegill down to approximately 3.5 inches in length. The PSD for bluegills is the proportion of bluegills over 3.15 inches (stock size) that are also at least 5.9 inches (quality size). Due to the number of smaller fish, the bluegill PSD was only 6. The collection consisted of only 7 quality-sized bluegills in the 6 to 7.5 inch range. The PSD value is well below the desired 20 - 40 range that would represent a balanced bluegill population.

Figure 3. Length frequency distribution of bluegills collected during the electrofishing survey of Chickahominy Lake on March 30, 2007 (N = 178, CPUE = 178 f/hr)

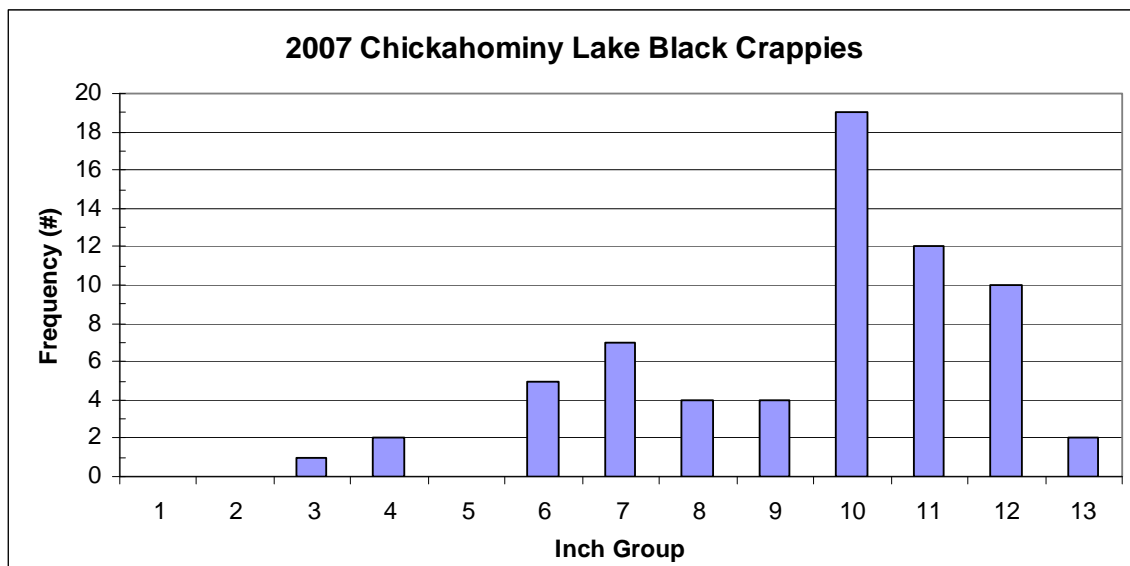


Trap net sampling was conducted on Chickahominy Lake on March 26th to 28th, 2007. The main purpose of this type of sampling is to collect the schooling fish such as black crappies that normally would not be fully represented in an electrofishing survey. The reservoir was divided in half with 10 trap nets set on the lower half of the reservoir the first night and then 10 nets reset to the upper half of the reservoir on the second night. A total of 20 net nights were used to assist with the evaluation of the fishery. The trap

nets were able to collect 19 species of fish. The nets were successful in catching bluegills. A total of 839 bluegills were collected over the course of two nights. The catch rate of 42 bluegills/net night showed a decrease from the 2006 survey (79 bluegills/net night). The bluegills ranged in size from 2 to 20 centimeters (1 to 8 inches) in length with the majority of the bluegills in the 5 to 10 centimeter range (2 to 4 inches). A total of 72 bluegills greater than 6 inches were collected. Only 3 bluegills greater than 8 inches were collected. The abundance of small bluegills offers a great prey source for the adult predators in the fishery.

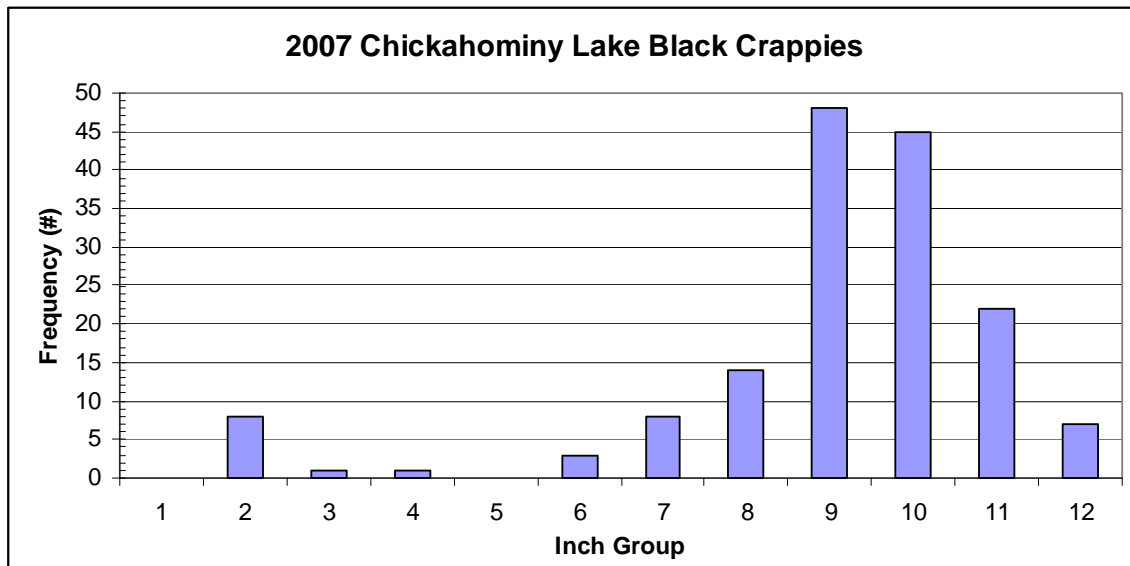
The black crappie population appears to be in decent shape with the majority of sample consisting of crappies in the 10 to 12 inch range. The electrofishing sample was only able to collect 66 black crappies for a CPUE of 22/hr. This catch rate showed improvement from the 2006 sample (CPUE = 9.5/hr). Black crappies tend to school in waters deeper than bass and bluegills. Taking this into account, the typical shoreline sample can be very random as to whether or not a school is encountered during a sample run. The largest crappie collected in the electrofishing run measured 13.9 inches with the overall average size equal to 10 inches.

Figure 4. Length frequency distribution of black crappies collected during the electrofishing survey of Chickahominy Lake on March 12th and 30th, 2007 (N = 66, CPUE = 22/hr)



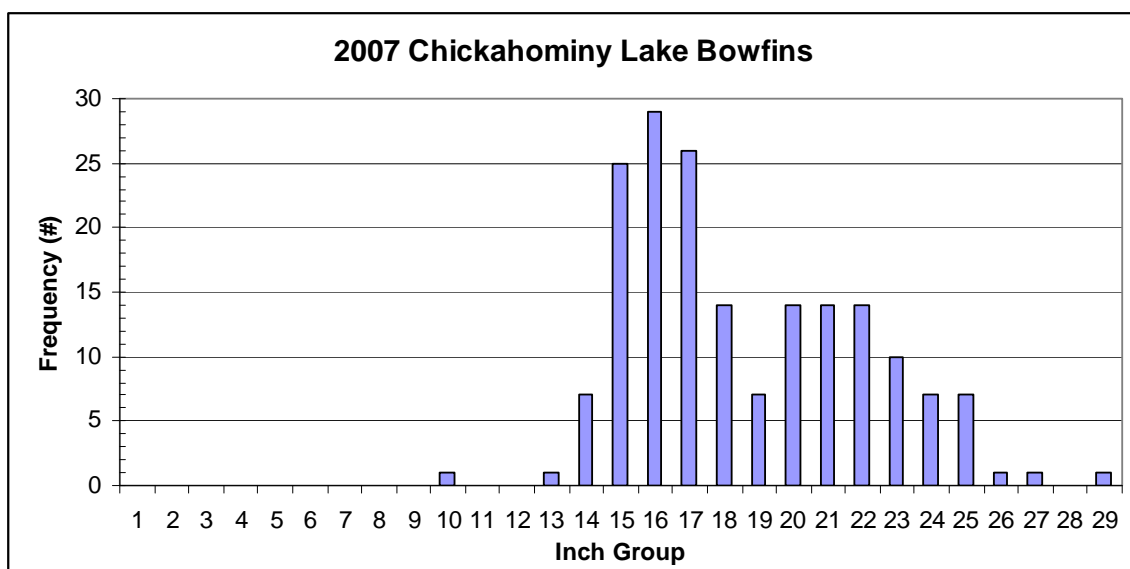
The trap net survey collected a total of 157 black crappies for a catch rate of 7.9 crappies/net night. The upper half of the lake yielded 55 black crappies and the lower half produced 102 black crappies. The majority of the sample consisted of crappies in the 9 to 11 inch range. The largest crappie collected during the trap net survey measured 12.6 inches and weighed 1.1 pounds.

Figure 5. Length frequency distribution of black crappies collected during the trap net survey of Chickahominy Lake on March 26-28, 2007 (N = 157, CPUE = 7.9 f/net night)



The bowfin population was represented with a greater abundance than past samples. The collection of 179 bowfins for a CPUE of 59.7/hr is the highest catch rate on record for Chickahominy Lake electrofishing surveys. The 2006 sample revealed 95 bowfins for a CPUE of 47.5/hr. The 2007 sample revealed an average-sized bowfin to be 19 inches in length. The largest bowfin measured 29.8 inches and weighed 8.4 pounds. A large proportion of the sample consisted of bowfins in the 15 to 25 inch range. The sample collected 17 bowfins that measured 24 inches or longer. The bowfin fishery will provide a lot of excitement for the average angler that fishes Chickahominy Lake.

Figure 6. Length frequency distribution of bowfins collected during the electrofishing of Chickahominy Lake on March 12th and 30th, 2007 (N = 179, CPUE = 59.7 f/hr)



The chain pickerel population of Chickahominy Lake has historically provided a lot of action for anglers over the years. The sample revealed a limited number of chain pickerel with only 31 chain pickerel collected (CPUE of 10.3/hr). This catch rate is similar to the 2006 sample (CPUE = 10.5/hr). The 2007 size distribution ranged from 2 to 20 inches. The majority of collected pickerel were in the 8 to 14 inch range. The largest chain pickerel only measured 20.6 inches in length. Due to the number of young pickerel, the average-sized chain pickerel measured 12.2 inches. The low abundance encountered during the electrofishing surveys of 2006 and 2007 may be a reflection of the entire population or just a reflection of the sites sampled on those days. Future sampling will help to determine the strength of the chain pickerel fishery.

The redear sunfish population appears to be in fair to decent shape. A total of 65 redear sunfish were collected during three electrofishing runs for a CPUE of 65/hr. This catch rate showed a slight decline from the 2006 sample (CPUE = 74/hr). The 2007 size distribution ranged from 1 to 10 inches with the majority in the 3 to 7 inch range. The average size redear sunfish measured 4.9 inches. The largest redear sunfish measured 10.1 inches. The trap net survey collected a total of 189 redear sunfish (CPUE: 9.5 fish/net night). This catch rate showed an increase from the 2006 trap net survey (CPUE: 6.5 fish/net night). The fish ranged in size from 2 to 8 inches. The trap net sample was similar to the electrofishing sample in that there were numerous redear sunfish in the 2 to 5 inch range.

A total of only 27 yellow perch were collected during the electrofishing surveys. The CPUE of 9/hr was nothing to write home about and less than the 2006 survey (CPUE = 11/hr). The size distribution was very similar to the 2006 survey and consisted primarily of perch in the 5 to 8 inch range. The average sized yellow perch measured 6.1 inches with the largest yellow perch measured at 10 inches. Yellow perch have historically been hard to collect from Chickahominy Lake. Electrofishing efforts have yielded low catch rates. The majority of the yellow perch movements into and around the shoreline come early in the spring before we sample the lake.

The remaining 10 species collected during the electrofishing survey were in low abundance. These species were creek chubsucker, flier, longnose gar, gizzard shad, golden shiner, bluespotted sunfish, warmouth, alewife, channel catfish and American eel. These fish add to the diversity of the overall fishery and may provide some limited angling opportunities.

The 16 remaining species collected during trap netting that were not specifically mentioned within the text are: largemouth bass, bowfin, brown and yellow bullheads, creek chubsucker, American eel, pirate perch, white perch, chain pickerel, gizzard shad, golden shiner, bluespotted sunfish, warmouth, flier, alewives and creek chubsuckers. All of these species were collected in limited abundance except for the flier, alewives and creek chubsuckers. A total of 79 fliers were collected. They ranged in size from 3 to 9 inches with the majority in the 5 to 7 inch range. A total of 260 alewives were collected during the 2 nights of trap netting. These fish managed to swim there way up through the fish ladder on Walkers Dam. They ranged in size from 9 to 12.5 inches with the majority in the 10 to 11 inch range. The trap netting collected a total of 299 creek chubsuckers. These fish ranged in size from 4 to 15 inches with the majority in the 11 to 14 inch range.

Chickahominy Lake provides a variety of fish species for anglers to target. The combined efforts of the electrofishing and trap net surveys revealed the presence of numerous fish species. The majority of the angling action will come from the abundant largemouth bass, bowfin and black crappie populations. The lake offers plenty of opportunities to catch bluegills and redear sunfish even though they are not all that large. Certain areas of the lake will hold some larger redear sunfish during the spring season as the fish prepare for the spawn. The overall number of recorded citations has dropped for Chickahominy Lake over the last few years. Only 21 citations were reported during 2007. These citations consisted of largemouth bass (5), chain pickerel (7), yellow perch (4), longnose gar (1) and bowfin (4). Chickahominy Lake still provides a very scenic area of the state where anglers have the opportunity to enjoy the resource and hopefully catch some decent fish.